



Just the Facts...

Emergency Drinking Water Disinfection Procedures

Home/Individual Emergency Disinfection Procedures

- **Boiling.** Vigorous boiling for one minute will kill any disease-causing microorganisms present in water. The flat taste of boiled water can be improved by pouring it back and forth from one container to another (to provide aeration), by allowing it to stand for a few hours, or by adding a small pinch of salt for each quart of water boiled. Let the water cool to a safe temperature before consuming.
- **Chlorine Bleach.** Common household bleach (unscented) contains a chlorine compound that will disinfect water. The procedure to be followed is usually written on the label. When the necessary procedure is not given, find the percentage of available chlorine on the label and use the information in the following tabulation as a guide.

Available Chlorine	Drops per Quart of Clear Water
1%	10
4-6%	2
7-10%	1

(If strength is unknown, add ten drops per quart of water. Double amount of chlorine for cloudy or colored water)

The treated water should be mixed thoroughly and allowed to stand for 30 minutes. The water should have a slight chlorine odor; if not, repeat the dosage and allow the water to stand for an additional 15 minutes.

If the treated water has too strong a chlorine taste, it can be made more pleasing by allowing the water to stand exposed to the air for a few hours or by pouring it from one clean container to another several times.

- **Granular Calcium Hypochlorite.** Add and dissolve one heaping teaspoon of high-test granular calcium hypochlorite (HTH) (approximately 1/4 ounce) for each two gallons of water. The mixture will produce a chlorine solution of approximately 500 mg/L, since the calcium hypochlorite has an available chlorine equal to 70 percent of its weight. To disinfect water, add the chlorine solution in the ratio of one part of chlorine solution to each 100 parts of water to be treated. This is roughly equal to adding 1 pint (16 oz.) of stock chlorine to each 12.5 gallons of water to be disinfected. To remove any objectionable chlorine odor, aerate the water as described above.
- **Tincture of Iodine.** Common household iodine from the medicine chest or first aid kit may be used to disinfect water. Add five drops of 2 % United States Pharmacopeia (U.S.P.) Tincture of iodine to each quart of clear water. For cloudy water add ten drops and let the solution stand for at least 30 min.
- **Chlorine/Iodine Tablets.** Chlorine and iodine tablets containing the necessary dosage for drinking water disinfection can be purchased in a commercially prepared form. These tablets are available from drug and sporting goods stores and should be used as stated in the instructions. When instructions are not available, use one chlorine/iodine tablet for each quart of water to be purified.

Bulk Emergency Disinfection Procedures

- **Coordination with Installation Water System Personnel.** Contact the installation water treatment plant to obtain disinfectants (calcium hypochlorite). Water treatment plants usually maintain emergency disinfection supplies. Do not use chlorine gas for safety reasons.
- **Distributing Water from Bulk Supplies.** Ensure a chlorine residual is maintained at all times in bulk supplies. Check chlorine residual on an hourly basis. If water is obtained from a raw water source or a source of questionable quality, dose bulk water supplies to attain at least a 5 parts per million (ppm) chlorine residual. The following tables show how much chlorine bleach or calcium hypochlorite needed to obtain a 5 ppm and 10 ppm chlorine residual for various amounts of water.

Liquid Bleach as Disinfectant

Gallons	5ppm	10 ppm
400	$\frac{3}{4}$ cup	1 $\frac{1}{2}$ cup
500	1 cup	1 $\frac{3}{4}$ cup
1000	1 $\frac{3}{4}$ cup	3 $\frac{1}{4}$ cup

Calcium Hypochlorite as Disinfectant

Gallons	5ppm	10 ppm
400	1 tsp	2 tsp
500	1 $\frac{1}{4}$ tsp	2 $\frac{1}{2}$ tsp
1000	2 $\frac{1}{2}$ tsp	5 tsp

Selected References

EPA, Emergency Disinfection of Drinking Water Fact Sheet, EPA 810-F-93-002, Jul 93.

Field Manual (FM) 10-52, Water Supply in Theaters of Operation, Jul 90.

Technical Bulletin Medical (TB MED) 577, Sanitary Control and Surveillance of Field Water Supplies, Mar 86.

U.S. Army Center For Health Promotion and Preventive Medicine Information Paper, Preventive Medicine Concerns of M149A2 and M1112 Water Trailers, IP No. 31-035, May 03.

Additional Assistance

Further guidance on emergency drinking water disinfection can be obtained by contacting the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) Water Supply Management Program at the address listed on the bottom of the fact sheet or by using email: Water.Supply@apg.amedd.army.mil.